Science Mission Directorate

SBIR Program Overview

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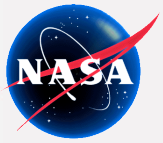
May 12, 2010

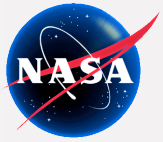
Agenda

- SBIR/STTR Overview
- Award summary of past solicitation
- Solicitation and award process
- SBIR program management
- SBIR program schedule
- SBIR topics
- Examples of SBIR technology infusion



SBIR/STTR Programs

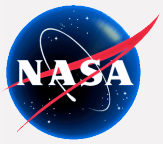
- Small Business Innovation Research (SBIR: 2.5% of extramural R&D budget) program awards contracts to small businesses
  - Two phase program
    - Phase 1: 6 months, $100K
    - Phase 2: 24 months, up to $750K max ($150K available during Phase 2 if program/project contributes $150K matching funds)
- Small Business Technology Transfer (STTR: 0.3% of extramural R&D budget) program awards contracts of small business for cooperative research & development with non-profit research institution
  - Phase 1: 12 months, up to $100K
  - Phase 2: 24 months, up to $750K
- Phase 3 is funded with non-SBIR funds for any amount or time.



SMD is allocated ~35% of SBIR procurement funds.

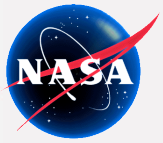
SMD 2008 P2 and 2009 P1 Award Summary

- **2008 Phase 2 awards**
  - 55 awards (10 ARRA awards) ~$33M over 2 years
- **2009 Phase 1 awards**
  - 551 proposals reviewed
  - 131 awards (15 ARRA awards) ~$13M over 6 months



SMD Solicitation/Award Process

- **Solicitation process**
  - SMD's division technologists identify the technology areas and provide guidelines to NASA field centers
  - NASA field centers write the topics and subtopics and assign personnel to these topics and subtopics
  - SMD's division technologists review the topics/subtopics write-ups and provide feedback to the NASA field centers
- **Award process**
  - NASA field centers review and rank the proposals
  - SMD' division technologists review the center ranked proposals and provide the recommendation to SBIR program office for award
  - NASA field centers manage the funded proposals



SBIR/STTR Technical Management

Assistant Director for Innovation and Technology (acting): Mike Moore
SMD Rep: Parminder Ghuman
Division Technologists:
PSD: Gordron Johnston
Heliophysics: Bill Stabnow
Astrophysics: Mike Moore
ESD: Robert Bauer/P. Ghuman

Program Executive (NASA Headquarters) — Level 1

Agency Program Office (Level 2)
SBIR/STTR Technology Manager:
Gary Jahns, ARC

SBIR Program Centers

Primary Centers

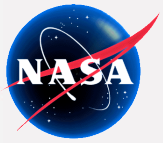
- ARC — SOMD
- JPL — SMD Lead Center
- GRC — ARMD
- LaRC — ESMD

Supporting Centers

- MSFC
- SSC
- GSFC
- DFRC
- JSC
- KSC

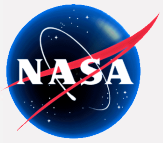
SBIR Program Schedule

- Solicitation process of both SBIR and STTR starts at the beginning of calendar year.
  - Topics/subtopics are finalized by centers on or before 2nd week of April
  - Topics/subtopics are concurred by SMD on or before end of April
- SBIR & STTR Phase 1 Solicitation: July 7, 2010 - September 2, 2010
- SBIR & STTR Phase 1 selection: 3rd week of November of solicitation year
- SBIR Phase 2 of the selection: 11 months from Phase 1 selection
- STTR Phase 2 of the prior year selection: 16 months from Phase 1 selection



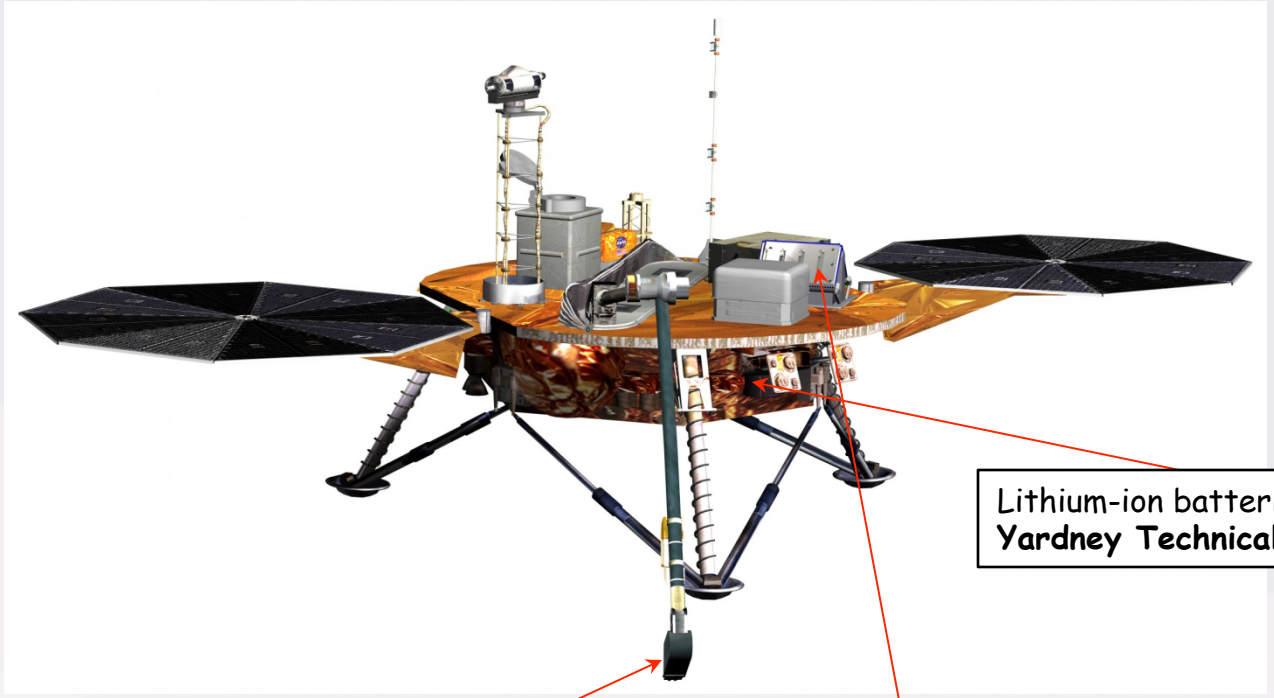
SMD's Technology Areas

- Sensors, detectors, and instrument
- Advanced telescope systems
- Spacecraft and platform subsystems
- Robotic exploration technologies
- Small satellite technologies
- Information technologies



Examples of SBIR technologies infused into Planetary Science Missions

Phoenix Mission



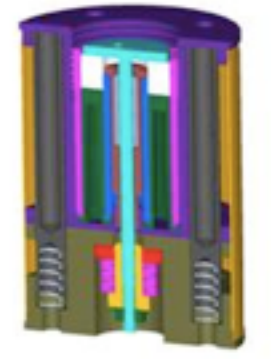
Lithium-ion batteries developed by **Yardney Technical Products, Inc.**

Icy Soil Acquisition Device developed by **Honey Robotics, Inc.**

Wet chemistry elements of the Microscopy Electrochemistry and conductivity analyzer developed by **SpaceDev**

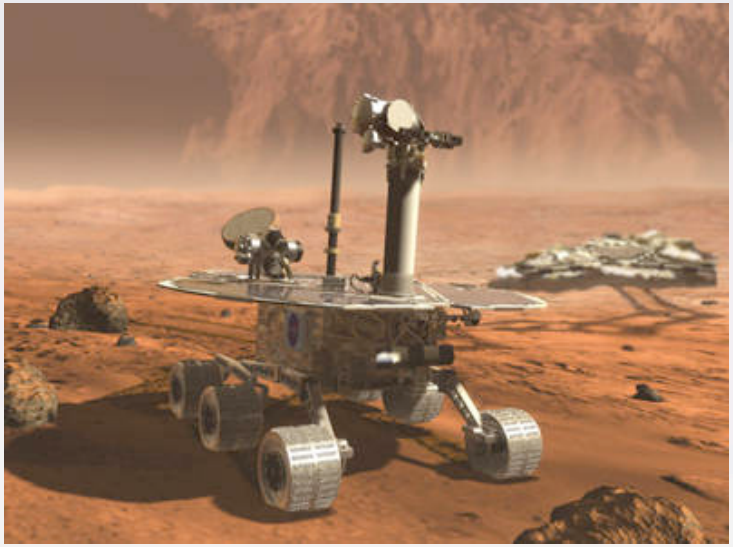
2003 Mars Rovers

Heat Switches control radiator for electronics package developed by **Starsys Research**



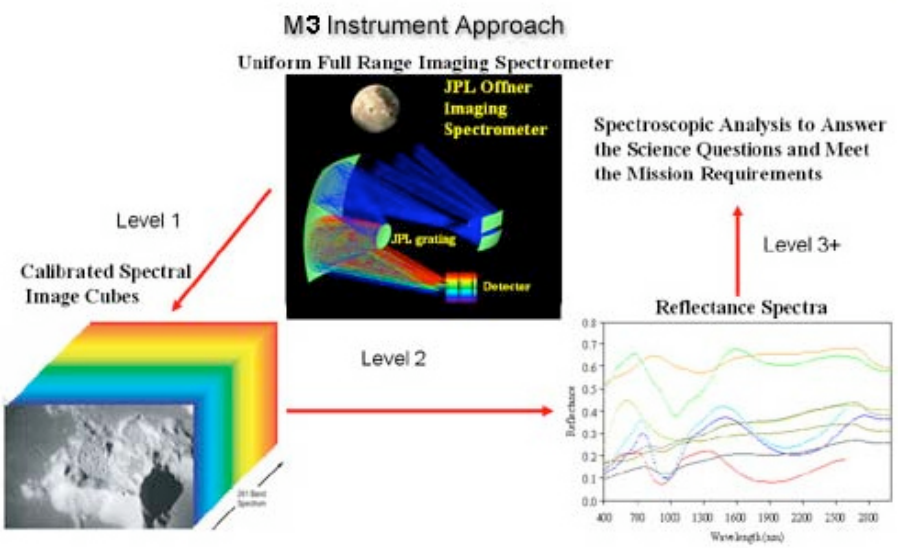
Lithium ion batteries supplied by **Yardney Technical Products, Inc.**

ADC with single event latch up protection technology enabling the use of commercial chip technology developed by **Maxwell Technologies**



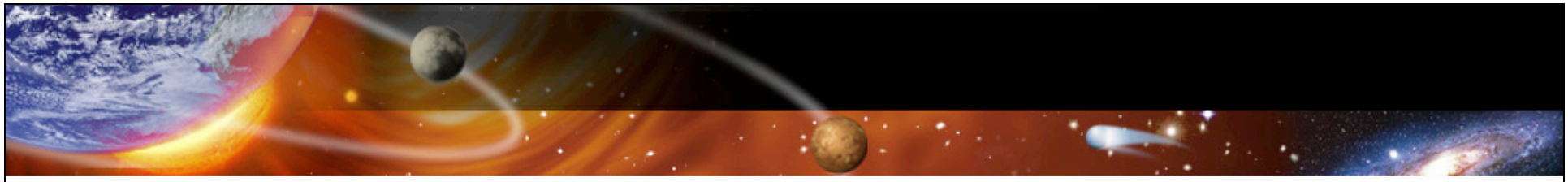
Software Allows Scientists and Engineers to Collaborate Over the Internet When Planning for Mars Rover Missions developed by **IA TECH, INC.**

Chandrayaan-1 & Kepler Missions

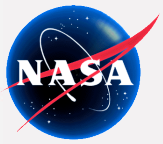


- Mirror coating process used
  - to make mirror for Moon Mineralogy Mapper instrument for India's satellite Chandrayaan-1, launched October 2008
  - for primary mirror for NASA's Kepler mission, 2008 launch

Developed by Surface Optics Corporation

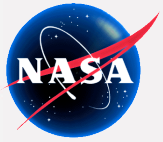


Backup



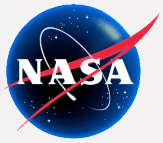
SMD's Topics/Subtopics (cont'd)

- Sensors, detectors, and instrument *(GSFC: Carl Stahl)*
  1. Lidar and Laser System Components *(LaRC) [GSFC, JPL]*
  2. Active Microwave Technologies *(JPL) [GSFC, LaRC]*
  3. Passive Microwave Technologies *(GSFC) [JPL]*
  4. Sensor and Detector Technology for Visible, IR, Far IR and Submillimeter *(JPL) [LaRC, GSFC]*
  5. Detector Technologies for UV, X-Ray, Gamma-Ray and Cosmic-Ray Instruments *(GSFC) [JPL, MSFC]*
  6. Particles and Field Sensors and Instrument Enabling Technologies *(GSFC) [JPL, ARC, MSFC]*
  7. Cryogenic Systems for Sensors and Detectors *(GSFC) [JPL, ARC, MSFC]*
  8. In Situ Airborne, Surface, and Submersible Instruments for Earth Science *(GSFC) [LaRC, MSFC, ARC, SSC, JPL]*
  9. In Situ Sensors and Sensor Systems for Planetary Science *(JPL) [GSFC, ARC, LaRC, MSFC]*
  10. Space Geodetic Observatory Components *(GSFC) [JPL]*
  11. Lunar Science Instruments and Technology *(MSFC) [JPL, GSFC, ARC]*



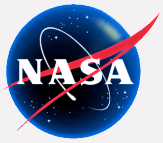
SMD's Topics/Subtopics (cont'd)

- Advanced Telescope Systems *(JPL: Stuart Shaklan)*
  1. Precision Spacecraft Formations for Telescope Systems *(JPL [GSFC]*
  2. Proximity Glare Suppression for Astronomical Coronagraphy *(JPL) [ARC, GSFC]*
  3. Precision Deployable Optical Structures and Metrology *(JPL) [GSFC, LaRC]*
  4. Advanced Optical Component Systems *(MSFC) [GSFC, JPL]*
  5. Optics Manufacturing and Metrology for Telescope Optical Surfaces *(GSFC) [JPL, MSFC]*



SMD's Topics/Subtopics (cont'd)

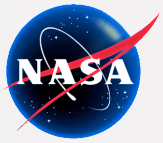
- Spacecraft and Platform Subsystems *(GRC: David Anderson)*
  1. Command, Data Handling, and Electronics *(GSFC [LaRC, ARC, JPL]*
  2. Thermal Control Systems *(GSFC) [ARC, GRC, JPL, MSFC]*
  3. Power Generation and Conversion *(GRC) [JSC, GSFC, MSFC, ARC, JPL]*
  4. Propulsion Systems *(GRC) [JPL]*
  5. Power Management and Storage *(GRC) [JSC, JPL, ARC]*
  6. Guidance, Navigation and Control *(GSFC) [JPL, ARC]*
  7. Terrestrial and Planetary Balloons *(GSFC) [JPL]*
  8. Planetary Ascent Vehicles *(GRC) [JPL, MSFC, DFRC]*
  9. Unmanned Aircraft and Sounding Rocket Technologies *(GSFC) [LaRC, GRC, ARC, JPL, DFRC]*
  10. Earth Entry Vehicle Systems *(LaRC) [ARC]*



SMD's Topics/Subtopics (cont'd)

- Low-Cost Small Spacecraft and Technologies *(ARC: Bruce Yost)*
  1. De-orbit Devices/Technologies for Small Spacecraft *(ARC) [GRC, KSC]*
  2. Miniature Integrated Payload Suites *(ARC) [GSFC]*

- Robotic Exploration Technologies (JPL: Samad Hayati)
  1. Planetary Entry, Descent and Landing Technology (JPL) [JSC, LaRC, ARC]
  2. Sample Collection, Processing, and Handling (JPL) [ARC, GSFC, JSC]
  3. Surface and Subsurface Robotic Exploration (JPL) [JSC, GSFC, LaRC, ARC]
  4. Rendezvous and Docking Technologies for Orbiting Sample Capture (JPL) [JSC, GSFC]
  5. Extreme Environments Technology (JPL) [GSFC, ARC, GRC, MSFC]
  6. Planetary Protection (JPL) [LaRC]



SMD's Topics/Subtopics

- Information Technologies (ARC: Joseph Coughlan)
  1. Technologies for Large-Scale Numerical Simulation (ARC) [GSFC]
  2. Earth Science Applied Research and Decision Support (SSC) [JPL, ARC]
  3. Algorithms for Science Data Processing and Analysis (GSFC) [LaRC, MSFC, SSC, ARC]
  4. Science Data Discovery in Extremely Large Data Environments (GSFC) [JPL, LaRC]
  5. Software Engineering Tools for Scientific Models (GSFC)